DOCUMENT RESUME

ED 041 153 08 VT 011 432

AUTHOR Kingston, Richard D.
TITLE Dental Auxiliary Occupations. Interim Report.
INSTITUTION California Univ., Los Angeles. Div. of Vocational Education.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO BR-8-0627
PUB DATE Apr 70
GRANT OEG-0-8-080627-4672(085)
NOTE 42p.

EDRS PRICE EDRS Price MF-$0.25 HC-$2.20
DESCRIPTORS Core Curriculum, *Curriculum Development, *Dental Assistants, *Dental Hygienists, *Dental Technicians, Educational Needs, Educational Programs, *Health Occupations Education, Research Projects, Task Analysis
IDENTIFIERS UCLA Allied Health Professions Projects

ABSTRACT

As part of a dental auxiliaries project, a Dental Auxiliary National Technical Advisory Committee was established, and its major undertaking was to assist in the development of a functional inventory for each of the three dental auxiliary occupations (dental assisting, dental hygiene, and dental laboratory technology). The analysis consisted of subdividing the task list into five categories and developing a survey instrument to answer questions about each task function. Currently, 900 survey instruments have been distributed nationally, and the results will be summarized in a later report. The instructional format which allows for individualized instruction, consists of 18 units intended to encompass skills and concepts required for performance in each dental auxiliary functional area. Core and sub-core curriculum possibilities are being selected. Additional background material is available as ED 037 570 (RIE July 1970), and other allied health professionals projects are VT 011 425-VT 011 431 in this issue. (SB)

ED041153

INTERIM REPORT

FOR

DENTAL AUXILIARY OCCUPATIONS

Richard D. Kingston, D.D.S.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Research and Demonstration Grant 8-0627
U. S. Office of Education, Bureau of Research
Department of Health, Education, and Welfare

UNIVERSITY OF CALIFORNIA, LOS ANGELES
Division of Vocational Education
Allied Health Professions Projects

April 1970

This publication was prepared pursuant to Contract No. OEG-0-8-080627-4672(085) with the Office of Education, U. S. Department of Health, Education, and Welfare. Points of view or opinions were developed on the basis of advisory committee suggestions and survey data. They do not, therefore, necessarily represent official Office of Education position or policy.

UNIVERSITY OF CALIFORNIA, LOS ANGELES
Division of Vocational Education

ALLIED HEALTH PROFESSIONS PROJECTS
Research and Development Project for Curricula
and Instruction in Allied Health Occupations

- - - - - - - - - - - - EXECUTIVE RESEARCH AND DESIGN GROUP - - - - - - - - - - - -
(EXECUTIVE COMMITTEE)

David Allen, Coordinator
Professional Resources Development Unit
Bureau of Industrial Education
State Department of Education

Miles H. Anderson, Director
Clinical Instructor Training Program
Division of Vocational Education
University of California, Los Angeles

Melvin L. Barlow, Professor of Education
Director, Division of Vocational Education
University of California, Los Angeles

B. Lamar Johnson, Professor of Education
University of California, Los Angeles

Richard S. Nelson, Chief
Bureau of Industrial Education
State Department of Education

Bernard R. Strohm
Assistant Director of Hospitals and Clinics
University of California, Los Angeles

- S T A F F -

Melvin L. Barlow, Ed.D.	Principal Investigator and Project Director
Katherine L. Goldsmith, Dr.P.H.	Deputy Director
Robert R. Henrich	Senior Associate Director for Facility Support Services
Richard D. Kingston, D.D.S.	Senior Associate Director for Clinical Services
Diane E. Watson	Senior Associate Director for the Secondary Schools Pilot Project
Mary Ellison Sylva Grossman	Editors

825 South Barrington Avenue, Los Angeles, California 90049 (213) 826-3581

FOREWORD

The Division of Vocational Education, University of California, is an administrative unit of the University concerned with responsibilities for research, teacher education, and public service in the broad area of vocational and technical education. During 1968 the Division entered into an agreement with the U.S. Office of Education to prepare curricula and instructional materials for a variety of allied health areas. For the most part such materials are related to pre-service and in-service instruction in programs from on-the-job instruction through Associate degree programs.

This interim report is a presentation of work to date in the development of curricula and instructional materials for the Dental Auxiliary Occupations. A National Technical Advisory Committee for the Auxiliary Dental Occupations provided assistance in designing a questionnaire to identify tasks performed by Dental Assistants, Dental Hygienists, and Dental Laboratory Technicians throughout the nation.

Melvin L. Barlow, Director
Division of Vocational Education
University of California

Professor of Education, UCLA

Principal Investigator,
Allied Health Professions Projects

TABLE OF CONTENTS

	Page
FOREWORD	iii
SUMMARY	vii
INTRODUCTION	1
Considerations in Material Development	2
The Instructor	2
The Students	2
Occupational Mobility	2
Curriculum Design	2
Relevance to Delivery System	2
METHODOLOGY	
National Technical Advisory Committee	3
Functional Analysis	3
Task List	4
Occupational Survey	4
Survey Universe	5
INSTRUCTIONAL FORMAT	
Curriculum Units	6
Value of the Modular Approach	10
Scheduling Core Modules	10
Attaining Degree Objectives	11
DENTAL LABORATORY	11
Specialty Training	12
Flexibility	13
Work-Study	13
Evaluation	13
Specialization	14
Degree Objective	14
ORGANIZATION OF MATERIALS	16
Allied Health Instructional Manual	16
Allied Health Occupational Program Planning Guide	17
Instructional Modules	18
Teacher's Guide	18
Validation of Instructional Materials	19

TABLE OF CONTENTS (continued)

	Page No.
SUMMARY	19
REFEREENCES	20
APPENDIX A	23
APPENDIX B	25
APPENDIX C	26
LIST OF FIGURES	
Figure I	8
Figure II	15

S U M M A R Y

Objectives

1. To summarize, to date, the activities within the project relating to the dental auxiliaries and to explore possible interrelationships which exist between the auxiliary occupations.

2. To propose suggestions for the preparation of instructional materials for the dental auxiliaries which will allow for an integration of instructional materials.

Procedure

1. Establishment of a National Technical Advisory Committee representing practitioners, supervisors, educators, and employers of dental auxiliaries.

2. Observation of existing dental auxiliary training programs.

3. Gathering data relevant to commonalities which exist between the dental auxiliaries and other allied health occupations.

Findings and Recommendations

1. Forthcoming curriculum materials will allow for individualized instruction.

2. Core and subcore curriculum possibilities are being explored in the development of instrucitonal materials allowing for the identification of commonalities both within the dental auxiliary clusters and with other allied health occupational areas.

3. Components within the curriculum are being selected after a careful consideration of the existing delivery system and recommendations from those individuals currently doing research in methods of improving the delivery system of dental health care.

4. Appropriate media support is being identified and/or produced which will contribute to the highest degree of teaching efficiency and effectiveness for the dental auxiliary occupations.

INTERIM REPORT
FOR
DENTAL AUXILIARY OCCUPATIONS

INTRODUCTION

The Allied Health Professions Projects of the Division of Vocational Education, University of California, Los Angeles, are currently conducting research and development in the allied health occupations with the intent of developing instructional materials of a unique and innovative nature for use in training a variety of allied health workers. This program is supported under Research and Demonstration Grant 8-0627 of the U. S. Office of Education, Bureau of Research, Department of Health, Education, and Welfare.

One of the clusters of allied health occupations being considered is the Dental Auxiliary field, consisting of Dental Assisting, Dental Hygiene, and Dental Laboratory Technology, for which actual instructional materials are now in the process of being produced and tested. It is the purpose of this report to outline the work that has been done thus far in the Dental Auxiliary occupations and to indicate the format which is to be followed and the general philosophies which will be incorporated into the materials that will be forthcoming.

Considerations in Material Development

The goals of the Dental Auxiliary project staff follow very closely the overall goals of the project itself. Specifically, they include an intent to provide, for educators throughout the nation, those curricula and instructional materials which will be the most useful to them in the establishment of new training programs and the upgrading of existing ones.

The Instructor

At the community college level and below, many of the instructors in the health field are selected because of their expertise and knowledge within their own allied health disciplines. They may not, however, possess extensive training and experience in modern educational methods. It is the project's intent, therefore, to develop materials that can be most useful for these instructors and administrators in the Dental Auxiliary field.

The Students

In the creation of instructional materials for national use, our project staff not only considers the needs of the educator and administrator, but also attempts to demonstrate a sensitivity to the individual student, to the

employer of training program graduates, and to the ultimate consumer of the services, the patient. Student needs present one of the greatest challenges to our project staff in innovating new training curricula, methods and media. Modern research in education contines to expand the realization that the learner presents a highly individualized response to various learning experiences and has his own individual pace of learning. The "lock step" of education through which large numbers of students are led denies more rapid progress to the more gifted student, while frustrating and oftentime entirely losing the under-achiever. If the student's needs are to be considered in developing innovative instructional material, a flexibility must be devised which will promote individualized instruction as much as is conducive to educational economy.

Occupational Mobility

A further consideration for the student's welfare dictates a concern for occupational mobility. Many recruitment programs in the allied health occupations fall short of expectations when a more enlightened student population begins to ask questions, not only about the immediate job opportunities, but also about the eventual career potential of a health discipline. Traditionally, many of the allied health occupations have created occupational "dead ends" for students, beyond which they may not progress without reversing their educational programs and repeating training in skills and concepts which they may already possess. Many students, on the other hand, who fail to demonstrate the aptitudes or skills needed for the occupation which was their initial choice, are lost entirely to the health field, rather than being allowed to shift their emphasis into contiguous but less demanding occupational areas without unnecessary loss of time or personal resources.

If the Allied Health Professions Projects are to meet their challenge of innovative curriculum, these materials must be produced in such a way to avoid such pitfalls whenever or wherever this can be accomplished without a loss in educational quality.

Curriculum Design

There is a further realization on the part of the project staff that while the educational environment for training Dental Auxiliary workers is commonly the community college or vocational school, education also takes place in individual dental offices, commercial dental laboratories, and in-service training programs conducted by local societies, as well as through independent study. While entry-level training is essential, in-service training also, of necessity, takes place. It is the desire of the project staff, therefore, to develop educational materials which can be utilized in a wide variety of instructional environments, allowing for the teaching of skills and knowledge by and for whoever needs these skills, regardless of the setting.

Relevance to Delivery System

Another very important consideration of our project is to develop curricular materials which are as relevant as possible to the desired delivery system.

Extensive facilities within the project, therefore, are directed towards evaluating the present and projected delivery systems, to determine as much as possible about the necessary skills within each of the occupational areas. The evaluative methodology which is utilized to survey the field is outlined in greater detail on page 4.

METHODOLOGY

The necessity of providing the project staff with information from many sources is considered one of the most important aspects of the project methodology. In addition to survey data as an input, each occupational area or cluster also has the representation of a National Technical Advisory Committee which ideally has the scope of as many facets as possible of the educational process and the total scope of the profession.

National Technical Advisory Committee

In the formation of the National Technical Advisory Committee for the Auxiliary Dental occupations (see Appendix A), it was decided that to facilitate the possible amalgamation of curricular materials and teaching methods, as well as to assist in the identification of the concepts and skills that may be common to more than one field, it would be desirable to form one advisory committee representing all three of the dental occupations, rather than establishing three separate committees. An attempt also was made to assure a diversified representation of educators, leadership from professional and governmental organizations, and practitioners in the auxiliary occupations, as well as ultimate employers, i.e., practicing dentists and commercial dental laboratory operators. Sub-committees were also formed (see Appendix B) to consider the specialty areas of Dental Assisting, Dental Hygiene, and Dental Laboratory Technology.

Functional Analysis

The first meeting of the National Technical Advisory Committee for the Auxiliary Dental Occupations was held in Los Angeles September 22-23, 1969. The report of that meeting has been published and is available on request to the Allied Health Professions Projects. The major undertaking for this Committee during this meeting was to assist in the development of a functional inventory for each of the three Auxiliary Dental occupations. There was also presented to the Committee a possible organizational structure for the materials that will eventually be forthcoming from the project as the result of the staff's activities.

To facilitate the eventual organization of instructional material in the proposed manner, the task inventory consists of functions relating to the entire Dental Auxiliary field. This approach will help to identify those skills that are common to more than one discipline.

The Task List

The task list has been subdivided into five categories. (The entire task list is found in Appendix C.) Tasks with the prefix number "1" include functions relative to the taking and processing of dental X-rays. In the actual survey phase of the project methodology, the X-ray portion of the task list has been included in survey forms which have been sent to Dental Assistants and Dental Hygienists.

Those functions bearing the prefix "2" represent functions which concern office and business procedures. Since at least some of these functions are found in job breakdowns of all three Dental Auxiliaries, this portion of the task list was sent to all of the Dental Auxiliary occupations.

Tasks bearing the prefix number "3" are Dental Assisting functions. They have been included in the survey instrument for Dental Assisting and Dental Hygiene, in an attempt to identify those tasks which may be performed in common by these two occupational areas.

The section of the task list bearing the prefix number "4" includes those tasks which are specifically associated with the Dental Hygiene function; this portion of the task list has been distributed only to Dental Hygienists. Where the possibility exists that some Dental Assistants may be providing a few of these functions, these items also have been entered in the Dental Assisting task list.

The final section of the job inventory, bearing the prefix number "5", relates to dental laboratory procedures. This entire list has been distributed to Dental Assistants, Dental Hygienists, and Dental Laboratory Technicians.

Occupational Survey

The task analysis survey phase of the project methodology, utilizing the list referred to above, was designed to answer a number of questions about each function. The first question is, "Is the task actually being performed?" The possibility exists in many of the allied health occupations, if not in the dental occupation per se, that some functions still persist in curricular materials which are no longer relevant to modern delivery systems.

The next question of importance is, "Who is performing the tasks that are being done?" Following a computer analysis of the data received from these surveys, which will also include personal and educational information about the respondent, it will be possible to ascertain which tasks are being performed exclusively by individuals within a specific occupational area and which represent functions of commonality. It also will be possible to determine from these data if there is a correlation between the amount of formal training or experience and the job responsibilities of Dental Auxiliaries.

Other data to be derived from the task analysis relate to how often each task is performed by those who are currently doing it. Tasks which are performed by only a few individuals in the field and/or done infrequently may not deserve equal emphasis or time expenditure within a curriculum with those

functions more universally and more frequently demanded.

Another important facet of a function, in order to determine its emphasis and method of instruction within the educational program, is an assessment of its difficulty. It has been the experience of the project staff in this respect that scales previously used to assess difficulty have been too general, easily misunderstood and/or ineffectual in producing information of value to curriculum construction. For this reason, the project's recent survey of dental occupations seeks to establish levels of difficulty by attempting to break it down into two different ways--cognitive (conceptual), and manual (psycho-motor). Incidentally, it should be kept in mind that while some tasks may be difficult to teach or to learn, once learned they are relatively simple to do, while others may be relatively simple to teach or learn but may carry into practical use a degree of difficulty which is not commensurate with their teaching difficulty.

A further input into functional analysis requires an evaluation of the criticality of each task by assessing how important it is that it be done correctly within a specified tolerance. This would include a determination of hazard to human life, equipment, and material resources, as well as losses in time and efficiency which accompany possible error if the task is not done correctly at all times. Another possible area of interest to task analysis in the health field involves an assessment of the degree of human interaction that is required with each task and, where possible, a determination of the degree of supervision that is required and/or actually encountered in the work situation.

Survey Universe

It is obvious that in order to characterize each function in the task inventory utilizing all of the above input data, a variety of sources must be tapped. It seems clear that while the working Assistant, Hygienist, and Technician in the field is perhaps the best source of data relative to the frequency and distribution of tasks as well as the degree of work difficulty, other sources must be called on to determine the teaching difficulty as well as the criticality of the performance. Data are being obtained, therefore, from a variety of additional sources, including practicing dentists, educators, consultants, and panels of experts.

In surveying Assistants, Hygienists, and Dental Technicians, the importance of national input is recognized in order to identify and compensate for regional differences. At the time of this writing, therefore, 900 survey instruments have been distributed nationally--300 to practicing Dental Assistants, 300 to practicing Dental Hygienists and 300 to practicing Dental Laboratory Technicians. The data forthcoming will be prepared for electronic data processing and analyzed in the near future. Project staff in a subsequent report will analyze and summarize this information.

Since, to the best knowledge of the project staff, there has been no task analysis of this scope within the Dental Auxiliary occupations, the data may prove very interesting and may be of great value in providing bases for modifications in curricular content. It is recognized, however, that task analy-

sis is not the only source of data for curriculum development. While task analysis may serve as a modifier of content, sequencing and emphasis of concepts and skills within a curriculum, careful scrutiny and validation by subject matter experts, as well as field testing, are considered most important contributors to success in innovating instructional materials.

INSTRUCTIONAL FORMAT

The project objective is to determine, using multiple sources, what content should be and would be acceptable to the ultimate consumer of the services as well as to the professional organizations involved. Once instructional content has been determined, the basic goal of the project would be to develop innovative ways of producing and packaging instructional materials which will be of the greatest value to allied health educators throughout the nation.

Curriculum Units

The format for the development of instructional material in the Dental Auxiliary field being followed by the project staff consists of 18 instructional units. They are as follows:

Dental Auxiliary Curriculum Units

1. Orientation

    1.1 Survey and Ethics of health field
    1.2 History and organization of dental sciences

2. Basic Laboratory

    2.1 Pouring and trimming of models
    2.2 Construction of custom trays
    2.3 Wax carving, investing, casting techniques

3. Anatomy

    3.1 Basic human biology
    3.2 Basic dental anatomy
    3.3 Oral anatomy

4. Basic Sciences

    4.1 Human biology
    4.2 Microbiology and asepsis
    4.3 Oral biology

5. X-Ray

    5.1 Creating and developing a latent image: dark room techniques

5.2 X-Ray physics and safety factors
5.3 Dental Radiography

6. Dental Office Procedures

7. Basic Dental Assisting

7.1 Identification and care of instruments
7.2 Chair-side techniques
7.3 Care and maintenance of dental equipment

8. Dental Health Education

9. Chair-side

10. **Expanded functions for Dental Assistants

11. Advanced pre-clinical basic sciences

12. Dental prophylaxis techniques

13. Preventive procedures

13.1 Topical fluoride application
13.2 Advanced functions for Dental Hygienists

14. **Expanded functions for Dental Hygienists

15. Full denture construction

16. Partial denture construction

17. Advanced gold lab procedures

18. Ceramics

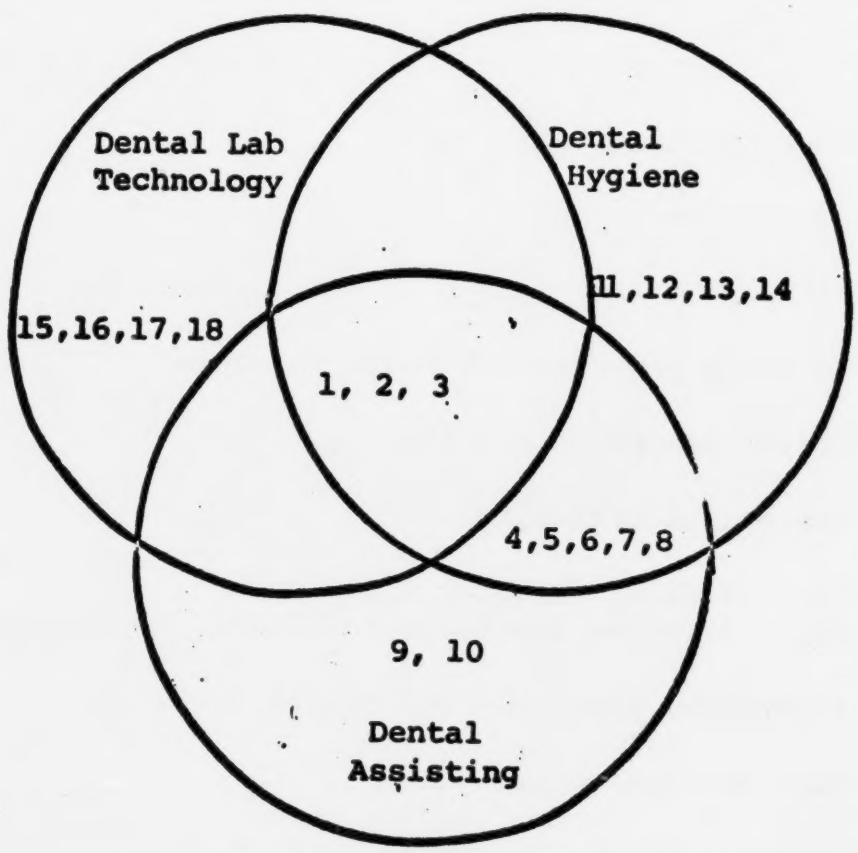
18.1 Porcelain
18.2 Gold-porcelain bonded

The above 18 instructional units are intended to encompass concepts and skills required for performance in the entire Dental Auxiliary functional area. Individual curricula for Dental Assisting, Dental Hygiene, and Dental Laboratory Technology will be assembled by selecting those instructional units which apply to the specific field in question. A graphic example of how these instructional units can be used in multiple programs is seen in Fig. 1. on the following page.

**Optional according to local needs and legislation

Fig. 1

Common Use of Dental Auxiliary
Curriculum Units



It will be observed by referring to this chart that Units 1, 2, and 3 (page 6) include all the basic concepts which are common to all three of the Dental Auxiliary occupations. These three curriculum units constitute a sub-core curriculum for the dental field. Curriculum Units 4, 5, 6, 7, and 8 provide the Dental Assisting and Dental Hygiene student with common concepts which relate equally to both curricula. Instructional Units 9 through 18 contain the specificities of concepts and skills which have application only in the specialized duties of each of the occupations.

In selecting the knowledge and skill content of each of the instructional units, a number of considerations must be met. In addition to an interest in the Dental Auxiliary sub-core curriculum, there also must be a consideration for the overall allied health core curriculum possibilities and any skills and concepts which are shared in common with other occupations. As an example, Curriculum Unit 1, "Orientation," will contain two instructional modules. The first module, "Ethics of the Health Field," is written to apply to all of the allied health fields. The second module, "Hisotry and Organization of the Dental Sciences," is written to supply Dental Auxiliary personnel with general concepts relating to their responsibilities and heritage within the dental occupations per se.

The instructional modules in the "Basic Laboratory" instructional units are being written with a number of possibilities in mind. When used as part of the sequence within the overall curriculum for the Dental Auxiliaries, these laboratory exercises, which also contain the appropriate related technical knowledge of the dental materials being utilized, provide each student with basic dental skills which will eventually be utilized by all of the Dental Auxiliaries regardless of specific occupational choice. They also enable both the student and the instructor to evaluate each student's ability to work with his hands when using actual dental procedures. This evaluation of manual aptitudes and skills may serve, at a point early in the curriculum, to assist in the testing, counseling and guidance of the student, either to verify his capabilities to pursue his original occupational choice, or to re-channel him into one of the other dental occupations for which he may show a greater potential.

Development of the instructional modules within the basic laboratory unit recognizes the fact that not all of instruction and/or learning in the dental occupations takes place in the classroom. Of necessity, much instruction takes place in the private dental office and the commercial dental laboratory, and in extension programs given by local dental societies or professional societies representing Assisting, Hygiene, or Technology. It is the intent of the project staff to develop these instructional modules in such a way that, with media support, they will be useful not only in the college or vocational school environment, but also for individualized or small-group instruction.

Curriculum Unit 3, "Anatomy," contains three instructional modules, of which the first, "Basic Human Biology," is a core module of instruction that, it is thought, will apply to many of the allied health fields. It is, however, written at an introductory level which, while it may contain all of the basic human biological concepts required for the Dental Laboratory Technician as well as some other allied health occupations, serves only as an introduction and a foundation for more advanced human biological concepts found in subsequent instructional modules in the Dental Assistant and Dental Hygienist curricula. The "Basic Dental Anatomy" instructional module, on the other hand, introduces basic concepts of dental morphology required by all three of the Dental Auxiliaries; in later instructional units this will be expanded for the benefit of the Dental Laboratory Technician.

Curriculum Unit 4, "Basic Sciences," includes the more advanced concepts of human biology required as curriculum components for the Dental Assistant and Dental Hygienist. It is anticipated that this will be useful as a core course for many of the other allied health occupations requiring a more advanced insight into human biology than is presented by the introductory course. The instructional module, "Microbiology and Asepsis," also is a core curriculum unit useful for a wide variety of allied health occupations in addition to the Dental Assistant and Hygienist. The instructional module titled "Oral Biology," however, builds on the the basic concepts and the core courses those concepts that are specific to the field and apply equally to the Dental Assistant and Dental Hygienist. This basic science curriculum unit will provide the Dental Assistant with the knowledge and skills in the basic sciences necessary to function adequately in his field, while the Dental Hygienist will also require Curriculum Unit 11, "Advanced Pre-clinical Basic Sciences," which augments and reinforces those concepts that have been covered in previous in-

structional units.

Another example of how instructional units are composed of modules can be found in the Dental Auxiliary Curriculum Unit 5, "X-Ray." The first module of instruction in this unit deals with concepts of physics and chemistry involved in the process of creating and developing latent images on film and the considerations of dark room technique. This unit of instruction would cover the various energy sources which may be effective in bringing about changes in emulsion that create a latent image, and the chemical changes which take place in converting that latent image into a visual one. A specific determination as to content of this module will be made to allow it to become the basic instructional module for both the Medical X-ray Technician and the Biomedical Photographer, in addition to the Dental Assistant and Dental Hygienist.

The second instructional module in this unit also will have a more general usefulness than specifically for the Dental Assistant and Hygienist; it will consider those facts and skills relating to X-radiation, its generation and the potential effects it may have upon X-ray film and biological tissues. It will be the intent of this instructional unit to cover the potential hazards of X-radiation and to point out what safety measures must be utilized in dealing with X-radiation. While this module of instruction does not apply to the Biomedical Photographer, it does contain skills and knowledge which are held in common by the Medical Radiologic Technician, the Dental Assistant, and the Dental Hygienist.

From this point on, the Dental Assistant and Dental Hygienist move on to the final instructional module in this unit, "Dental Radiography," which contains all the additional specific information they need concerning the taking, processing, identification, mounting and labeling of dental radiographs. A Biomedical Photographer and Medical Radiologic Technician obviously move from the X-ray core modules on to their own specificities in separate instructional modules to complete their technical courses of instruction.

Value of the Modular Approach

This modular approach to curriculum construction implies a number of interesting possibilities. By assembling curricula from modules, some of which may have application in multiple allied health fields, entire programs will develop into a core curriculum with several sub-cores. Such curricula will be marked by individuality that most closely meets the needs of the educational institution involved, depending upon the number and the character of allied health training programs offered on that campus.

Scheduling Core Modules

While, because of scheduling or logistic problems, it may not be feasible to teach only one section of the general core courses which would involve students from many disciplines, advantages still exist. Even though several sections of a module of instructions may be called for to accommodate student needs, the instructional materials, media support, faculty, laboratory materials and text materials need not be duplicated unnecessarily. In the case of the basic

science sequence of instructional modules designed to apply to many of the allied health fields, the lecture section of the basic science module could easily be offered for students in several allied health fields, while the laboratory sections, broken up into smaller groups, could participate in the appropriate laboratory exercise. Thus, a student may begin to use laboratory skills which are more relevant to his chosen field, while applying the general principles and concepts which are shared with his fellow students in the other health fields.

A source of the educational waste that characterizes many allied health fields is a lack of career mobility, both horizontal and vertical. This tends to "dead-end" a student in an occupational area which would require him to repeat course work in many concepts and skills if he wanted to enter another similar field or one requiring a higher level of competence. In designing the curriculum units for the Dental Auxiliary fields, the concept of career mobility has been kept in mind so that the student is able to build on to previously acquired knowledge, skill and experience.

Attaining Degree Objectives

It will be noted that the instructional units mentioned within these curricula do not include Liberal Arts or enrichment material. Rather, this project's concern is primarily with the essential knowledge and skill required to perform adequately within an occupational field. It would, therefore, be desirable to develop the essential instructional material in such a way that it could either be presented as a unit and completed in approximately one academic year (in the case of the Dental Assisting curriculum), or be integrated into a two-year program along with appropriate Liberal Arts requirements, to achieve an Associate of Arts or Science degree. A second alternative to the Associate degree option would be for the student to complete the technical course work in one year and, after entering the work force, return to a community college, perhaps in evening school or adult school, and proceed towards the Associate degree. With the Associate degree graduate in Dental Assisting or in Dental Hygiene, every effort should be made to design instructional materials that allow for maximum transfer of credit to the four-year college or university setting, thus enabling the Dental Assistant, Hygienist and Laboratory Technician to work toward a baccalaureate degree in preparation for supervisory and/or teaching responsibilities.

Another possibility exists with the unit, modular approach to Dental Auxiliary education which would allow a graduate of Dental Assisting, after having completed the core and sub-core materials which are held in common with the Dental Hygienist, to proceed to the Dental Hygiene curriculum without a repetition of training in the common knowledge and skills which she already has successfully mastered.

DENTAL LABORATORY

An evaluation of Dental Laboratory Technology education by national committees and by the Bureau of Economic Research and Statistics of the American Dental Association has indicated that only 5.5 percent of the working Laboratory

Technicians were trained in two-year post-high school courses accredited by the American Dental Association. Fully 51 percent received only on-the-job training. Others were trained in short courses (one or more days in length) conducted by supply houses, manufacturers, or laboratory owners, instruction conducted by the Armed Services, and one-month to twelve-month commercial (proprietary) school courses. It is clear from this study that if community colleges and universities are to assume the training role in the Dental Laboratory field, not only the quality but the quantity of educational programs must be considerably improved.

One further point of interest indicated by this survey is that in 1966 only 26.2 percent of the working Technicians were functioning in the broad, general field of dental technology. The remaining 73.8 percent were specialists in the major subdivisions. Interviews with laboratory operators and owners seem to indicate that graduates of two-year training programs, while exposed to all phases of Dental Laboratory Technology, are not considered to be fully competent in any of the specialty fields in which most of them will eventually function. As a result, the operator or owner becomes involved in on-the-job training to an extent that could, it is hoped, be avoided by the employment of a graduate Technician. The laboratory administrators' attitude seems to be that if they have to provide on-the-job training, then they may as well start with a completely untrained individual who will work for less money than a graduate Technician.

Specialty Training

While change in the curriculum seems called for to provide training of Dental Technology specialists in the fields of ceramics, partial dentures, complete dentures, and crown and bridge, the reality still exists that, with national certification standards, a general background in all phases of technology is also desirable. This situation is further complicated by the increased employment of Dental Technicians in private offices and in small one-man operations where broad-based experience and skill are required.

The project intends to explore the possibility of developing the Dental Technician curriculum so that it would allow for individualization in training, to enable promising students to specialize in areas within the broad field of Dental Technology during their two-year training program, while also allowing for the fully trained generalist to emerge from the same program. This could be done in the following manner: Unit 1 would introduce a student to the basic skills and principles of the dental laboratory and provide him with the skills and knowledge necessary to perform the more elementary and routine laboratory chores, e.g., model pouring and trimming, construction of base plates, bite blocks, custom trays, wax carving, investing, casting procedures, and simple denture repairs. As indicated earlier, this Unit 1 is part of the core curriculum also offered for Dental Hygienists and/or Dental Assistants, where two or three Dental Auxiliary programs exist on the same campus.

Unit 15 would carry the Dental Technology student through the techniques of a full denture setup, the theory of articulation, the investment, processing and polishing of the full denture. Unit 16 would include considerations incidental to construction of the partial denture, including design, wax-up,

casting, and finishing of partial dentures. Unit 17 would include gold techniques used in the fabrication of crown and bridge restorations and inlays, and would afford the student advanced training in dental anatomy, carving, investment and casting as well as soldering and finishing techniques. Unit 18 would include a contination of the carving, investment and casting of precious metals as they apply to the porcelain bonded-to-gold techniques, and a consideration of the principles of ceramics in both bonded restorations and porcelain jacket crowns. The remaining three units would allow time for the student to complete supervised and specialized training in the specialty area of his choosing or, by repeating several of the modular considerations at the advanced level, to continue in a general curriculum.

Flexibility

In suggesting that a student be allowed to repeat modules already completed, it is not implied that the same projects necessarily be repeated, unless such repetition could be justified as a means of developing increased skill and/or efficiency. It would be preferable if a student could be allowed to advance at his own pace within a module, so that more sophisticated techniques and projects could be attempted as soon as the basics were mastered.

The educational mechanics of such a program may not be as difficult as they seem on the surface. As a class of individuals advances to their more divergent interests, it is not inconceivable that students in the same laboratory at the same time may be working on different types of projects. Supervision in most training programs is carried out by instructors who are fully competent to instruct in all fields; this makes possible the concept and practice of the multi-disciplined laboratory session.

Work-Study

One other possibility deserves consideration at this time. On those community college campuses where logistics and community relationships allow, it is entirely possible that much of the laboratory training in the advanced modules could be carried out on a work-study basis in local commercial laboratories. The work-study arrangement has proven very successful in several Dental Laboratory Technology training programs. It provides advanced students with on-the-job training which affords valuable insights into the realities of commercial operation. The on-the-job contacts made by students also effectively assist in placement after graduation.

Evaluation

It should be emphasized at this juncture that in order to be successful, the flexible and individualized curriculum suggested here would place an added responsibility upon the educator to develop effective instructional techniques along with instruments that would assist the student to evaluate his own individual aptitudes, interests and skills, so that proper counseling and guidance would enable the student to reach his full academic and technical potential within the program. The overall goal, therefore, would be to iden-

tify in each individual student his own areas of strength and interests by the time he has completed the 5th module, so that the balance of his course could be designed in a specialty area which would better prepare him for a more productive entry into the laboratory work force.

It will be noted from Fig. 2 (on the following page) that Option #1 would allow a student to prepare himself for a specialty assignment in the fabrication of full and partial dentures, whereas Option #2 would produce specialists in the field of crown and bridge. Option #3 would work toward a specialty in ceramics, while Options #4 and #5 would allow a student to prepare himself with a more general and rounded background for entry into the Dental Technology work force in a private dental office or clinic.

Specialization

Another general requirement of a modern allied health curriculum is provision for continued occupational education. It is, therefore, suggested that the above modular plan also be offered by the educational institution on an extension basis, to allow the modules to be repeated, perhaps in evening school, as many times as is desirable or necessary for attainment of the student's individual goals. Curriculum experts in the field of allied health are continually being admonished to allow for individual advancement in a given educational area and to avoid the educational "dead end" wherever possible. In the field of Dental Laboratory Technology, becoming the independent owner-operator of a dental laboratory is a desirable terminal goal for any entering Dental Technology student, and the completion of a two-year program with the opportunity to repeat speciality or general modules on an extension basis, in addition to taking selected courses in business administration, would allow any student to pursue this objective.

Degree Objective

The most obvious question arising from the above approach to training Dental Laboratory Technicians is, "Is there time in a two-year Associate Degree Curriculum to allow for sufficient training in general laboratory techniques to qualify a graduate for national certification, and at the same time allow sufficient time to specialize to a degree that would produce a more productive specialty Technician with a minimum of on-the-job training?" An answer to this problem may be found in a reappraisal of the entire Associate degree concept as it applies to the training of Dental Laboratory Technicians in the community college. While many of the general education requirements are held necessary for the granting of an Associate degree, and may be desirable in the grooming of a "gentleman and a scholar," some components in existing curricula may prove irrelevant to the training of skilled Technicians. The desirability of the Associate degree and its application to advanced training cannot be minimized, however, and if it is possible for a student, as a result of previous college training or the ability to handle a heavier course load, to utilize elective time and secure an Associate degree, it certainly would be preferable to encourage this option.

Another possible route would allow a student who completes two years of technical training without meeting the Associate degree requirements to finish the

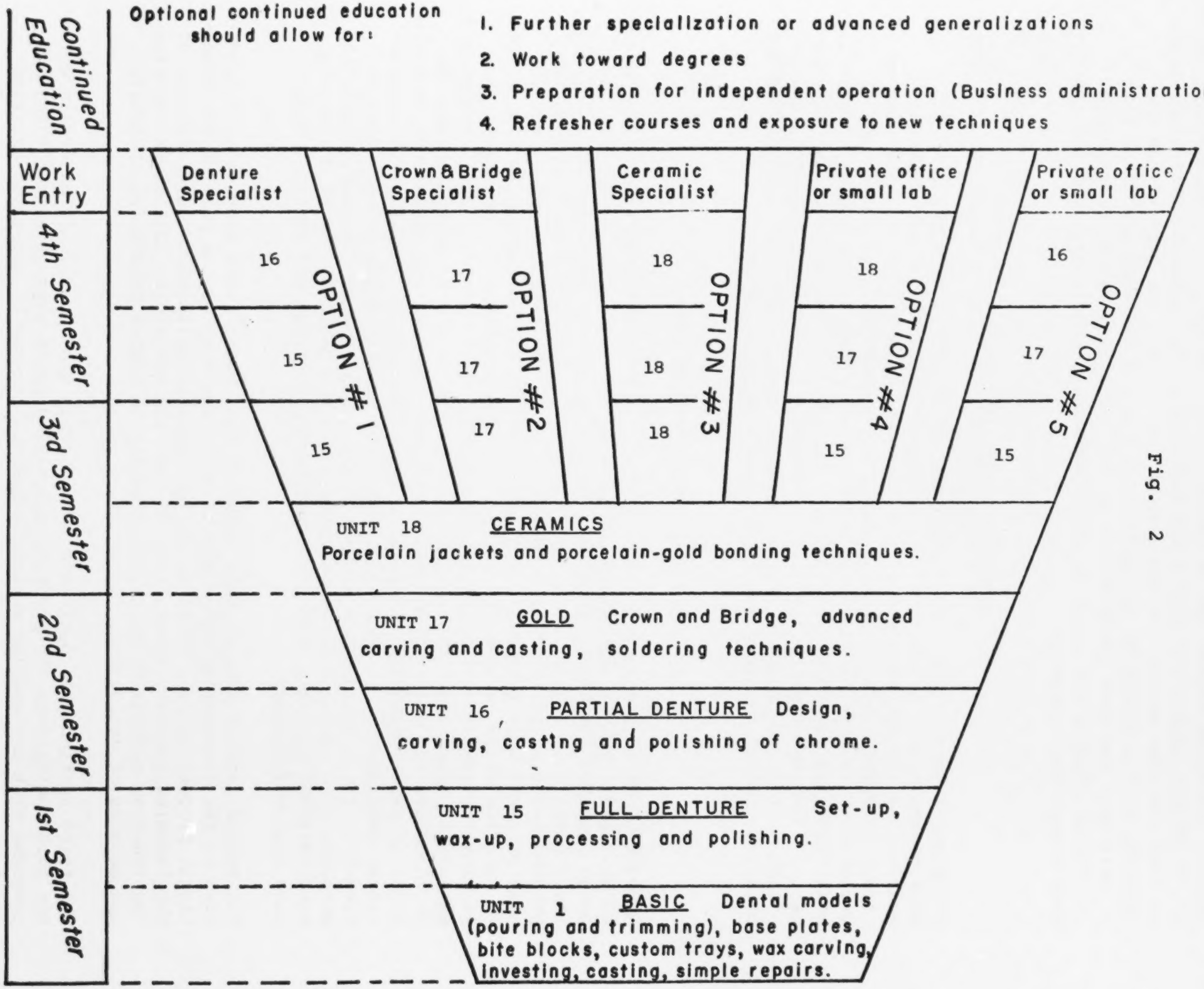

Continued Education
Optional continued education should allow for:
1. Further specialization or advanced generalizations
2. Work toward degrees
3. Preparation for independent operation (Business administration)
4. Refresher courses and exposure to new techniques
Work Entry
Denture Specialist
Crown & Bridge Specialist
Ceramic Specialist
Private office or small lab
Private office or small lab
4th Semester
3rd Semester
2nd Semester
1st Semester
16
15
17
17
17
18
18
18
18
17
15
16
17
15
OPTION #1
OPTION #2
OPTION #3
OPTION #4
OPTION #5
UNIT 18 CERAMICS
Porcelain jackets and porcelain-gold bonding techniques.
UNIT 17 GOLD Crown and Bridge, advanced carving and casting, soldering techniques.
UNIT 16 PARTIAL DENTURE Design, carving, casting and polishing of chrome.
UNIT 15 FULL DENTURE Set-up, wax-up, processing and polishing.
UNIT 1 BASIC Dental models (pouring and trimming), base plates, bite blocks, custom trays, wax carving, investing, casting, simple repairs.

Fig. 2

general education requisites in evening school or on an extension basis. It is, therefore, suggested that a streamlining of the overall curriculum could provide the time needed for the acquisition of both the general and the specific skills necessary to produce the kind of graduate who still more closely meet the need requirements of the individual dental practitioner, the dental clinic, the large or small commercial laboratory, and the individual independent operator.

ORGANIZATION OF MATERIALS

Decisions regarding the actual placement of a concept or a skill in its appropriate module or unit of instruction will be made after a careful analysis of the requirements of the job descriptions involved, and with an effort to create instructional modules which have the greatest degree of versatility as core or sub-core instructional modules. An overall format has been developed for these instructional materials. Subject to future modifications and improvements, it will be designed to provide instructors and administrators in prospective and existing training programs with all of the materials needed to carry out an effective training program.

Allied Health Instructional Manual

A document which presents the most general information regarding allied health instruction, tentatively titled, "Allied Health Instructional Manual," is being prepared for use by educators in any or all of the allied health fields. Its content will include three general areas, in response to the often expressed needs of allied health educators whose professional experience may have prepared them adequately for the technical considerations they will need to function within a specific allied health occupation, but who often are lacking the educational expertise to utilize modern instructional methods and materials. The first general area in this instructional manual covers the philosophies and goals of allied health education and discusses such pertinent areas as career mobility, in-service training, and the varieties of instructional environments in which allied health training takes place. Also included in the first section are materials explaining equivalency, evaluation methods, core curriculum possibilities, and the desirability of developing instructional programs with direct relevance to local and national health care delivery systems.

The second general area in this instructional manual will provide an introduction to the terminology and concepts which are very much a part of the educational process today. Chapters in this section will include a discussion of the learning process, identifying and writing behavioral objectives, developing teaching methods which relate directly to stated behavioral objectives, and methods of evaluation.

The third section will deal more specifically with how to use materials which are forthcoming from the project, and will discuss ways of establishing new programs that use modular materials for the purpose of upgrading existing programs, conducting in-service training, and providing opportunities for independent and group study. Also discussed are the possible interrelations

with other allied health training resources, which would include interrelated use of physical facilities and faculty, team teaching, and instructional materials including the media. Also included within this general manual section will be discussion of student recruitment and the formation of general community advisory committees for the allied health fields.

Allied Health Occupational Program Planning Guide

Another type of publication now in the preparation stage is a specifically designed program planning guide for each of the occupational clusters. In the area of the Dental Occupations, this planning guide will include eight specialized sections, as follows.

(1) Introduction to Auxiliary Education. This will discuss the relationships of the auxiliaries to dentistry and the team concept of the delivery system as well as the relationships that the Dental Auxiliaries bear to other allied health fields. This section also discusses the job descriptions of the Dental Assistant, Dental Hygienist and Dental Laboratory Technician.

(2) An Evaluation of Community Needs for Workers. This chapter will deal with the need for educational institutions to document and quantify as accurately as possible the needs of the community or region for the specific type of worker in question. This material also will cover such methodologies as employer surveys in the evaluation of these needs.

(3) Evaluating Resources. After the needs of the community have been evaluated, there should be a thorough investigation of resources existing in the community, including the clinical, office, and laboratory resources as well as hospital clinical facilities which can be utilized by the existing and/or proposed training programs. It also is necessary for the educator proposing a new program to be able to identify what financial resources may be available at local, state, federal or private levels.

(4) Physical Facilities. In determining the needs for a new Dental Auxiliary program, the program planners should also provide the administrator or educator with information as to the physical facilities that would be necessary to carry out training in either a single allied dental occupation or for multiple programs. Where multiple programs exist, this guide will include a clarification covering facilities that can be utilized in common, and the methods of doing so.

(5) Curriculum Modules. This section will specify which of the prepared instructional modules will be necessary to establish curricula in each of the Dental Auxiliary occupations, identify methods of using these curricula in community colleges, vocational schools, and individual and group study, and specify the relationships that these modules bear to advanced study.

(6) How to Teach Using the Modular Materials. This chapter will detail methods suggested for the use of the modular materials and include suggestions as to how the instructional materials can be augmented and supplemented, using the innovative resources of the instructor.

(7) Core Curriculum Possibilities. This chapter will be designed to explore the methods by which single and multiple Dental Auxiliary programs can be developed using core and sub-core materials, as well as the possible interrelationships which these programs may bear with other allied health occupation training programs located on the same campus.

(8) The Formation and Utilization of Advisory Committees. It is the intent of this chapter to provide guidance in the recruitment and functions of a specific advisory committee for the dental occupations. It will cover the type of input which is the most valuable and suggest ways to form these committees.

Instructional Modules

The next level of publications which are being produced by this project are the instructional modules themselves. Each will contain introductory material for the module which carefully specifies its purpose and provides appropriate motivational material to inform the student and the instructor of the rationale behind the content, its relationship to other modules, and the relevancy of the material to possible application of skills. Each instructional module also will contain the behavioral objectives for the module, as well as any intermediate objectives which relate directly to the overall module objectives.

Beyond a statement as to what the student should be able to do in behavioral terms upon completion of each module, there also will be included all of the related technical knowledges and skills necessary to meet the behavioral objectives.

The method of instruction to be included in each instructional module will specify the preferred type of instruction, i.e., lecture, demonstration, participation, clinic, etc; textbook references which refer specifically to related concepts and skills; workbook references; and instructional media which may be available in films, slides, models, etc.

Evaluation methods will also be developed for each instructional module where necessary.

As an example of the format for a specific concept or skill within the overall behavioral objectives of an instructional module, it is intended that each concept or skill be preceded by a discussion of related knowledge. The task is then broken down into its component key points, with a detailed "how to do it" listing of the skill with appropriate illustrations. Lists of necessary materials also will be provided. The exercise will then be followed with appropriate evaluation materials, either written or practical.

Teacher's Guide

It is intended that each instructional module be accompanied by a separate teacher's guide. Since the module of instruction itself is being produced for use by both the student and the instructor, it also is desirable to provide supplemental information for the instructor's use which would assist him in using the module of instruction to its maximum potential. This supplemental

material would include more detailed methods of presentation, such as lecture outlines for the module, demonstration guides, lists of materials for demonstrations and methods of demonstrating, how to use the media materials in demonstration and lecture, and how to evaluate student achievement in an instructional module to assure that the stated behavioral objectives have indeed been met to the maximum abilities of the student. This evaluation would include a statement of performance criteria, sample written examinations where appropriate, and checklists for procedures.

At the time of this writing, the instructional modules were in the process of being written by technical writers outside the full-time project staff; they are to be edited and put into final form by staff writers and editors.

Validation of Instructional Materials

The next step in the project methodology involves the validation of instructional materials. This is being done in cooperation with existing Dental Auxiliary training programs throughout the nation. Before these instructional materials are published in final form, it is hoped that each will have been tested in operational programs, to assist the staff to identify strengths and weaknesses and to bring about appropriate modifications before final publication.

During the trial period, another phase of the project methodology will be undertaken, involving the production of necessary media materials. While the project staff has been involved in the identification and acquistion of those materials now available, there still is a need to produce many more materials. At the present time the project is working with several different commercial producers of films, slides, film strips, transparencies, etc. and is making an attempt to encourage the private sector's involvement in the project through the production of materials which have been identified as currently lacking. Before becoming available for national distribution, these materials also would be tested and validated in existing programs to determine their efficacy and educational impact.

SUMMARY

It has been the intent of this document to summarized the activities to date in the Dental Auxiliary occupations for the Allied Health Professions Projects, Division of Vocational Education, University of California, Los Angeles. It is hoped that the information contained herein, while not definitive and still in need of modification and refinement, will nonetheless be of some assistance to those individuals whose interests are similar to those of the UCLA Projects, and particularly to those who are charged with the responsibility of developing and improving allied health training programs.

Continual input and evaluation are being sought from interested sources to assist in the determination of today's needs in the field of Dental Auxiliary education. As the inputs are received, evaluated and incorporated into the project materials, subsequent progress reports will be forthcoming.

REFERENCES

[1] "Survey of the Dental Laboratory Industry, 1966. II. Dental Laboratory Personnel." Pg. 485, JADA, Vol. 74, Feb., 1967.

[2] "Survey of the Dental Laboratory Industry, 1966. V. Summary." Pg. 1294, JADA, Vol. 74, May, 1967.

APPENDIX A

NATIONAL TECHNICAL ADVISORY COMMITTEE FOR THE AUXILIARY DENTAL OCCUPATIONS

Mrs. Joy Ward (Dental Hygienist)
Director of Dental Hygiene Education
Los Angeles City College
Los Angeles, California

Thomas W. Beckham, Director of Education
American Dental Association
Chicago, Illinois

Dr. Nathan H. Boortz, Chairman
Dental Auxiliary Curriculum Planning Committee
California Community Colleges
Director, Technical Education
Foothill Junior College District
Los Altos Hills, California

Robert M. Gertz
Acting Executive Director
Association of Schools of Allied Health Professions
Washington, D. C.

Harold Globe, C.D.T.
Globe Dental Laboratory
Beverly Hills, California

Otto Kramer, Owner and Operator
Kramer Dental Studios
Minneapolis, Minnesota

Miss Lois K. Kryger
Dental Assisting Consultant
Division of Dental Health
National Institutes of Health
Bethesda, Maryland

Robert R. Montgomery, D.D.S.
Coordinator, Dental Assistants
Program
Oakland Community College, Highland Campus
Union Lake, Michigan

Wayne L. Pack, D.D.S. (Practicing Dentist)
Committee on Dental Health Auxiliary
Education
Ogden, Utah

Miss Margaret Ryan
Director, Division of Education
American Dental Hygienist Association
Chicago, Illinois

Charles Strother, D.D.S. (Practicing Dentist)
Chairman, Council on Dental Education
Southern California Dental Association
Glendale, California

Mrs. Hazel Torres
Coordinator of Dental Assisting
College of Marin
Kentfield, California

Miss Rosemarie Valentine
(Dental Hygienist)
Fort Lauderdale, Florida

William R. Woodworth
Dental Laboratory Training Program
Los Angeles City College
Los Angeles, California

Mrs. Lucille Giles
(Dental Assistant)
Ogden, Utah

APPENDIX B

SUBCOMMITTEES

NATIONAL TECHNICAL ADVISORY COMMITTEE

FOR THE AUXILIARY DENTAL OCCUPATIONS

Dental Hygienist Subcommittee

Dr. Wayne Pack - Chairman
Mrs. Joy Ward
Dr. Nathan Boortz
Miss Margaret Ryan
Miss Rosemarie Valentine

Dental Assistant Subcommittee

Dr. Robert Montgomery - Chairman
Mr. Tom Beckham
Mrs. Lucille Giles
Miss Lois Kryger
Mrs. Hazel Torres

Dental Laboratory Subcommittee

Dr. Charles Strother - Chairman
Mr. Robert Gertz
Mr. Harold Globe
Mr. Otto Kramer
Mr. William Woodworth

APPENDIX C

TASK LIST

1.1 Supervise subordinates in operating dental X-ray equipment.

1.2 Adjust voltage, amperage, and timer of X-ray machine.

1.3 Apply paralleling (long cone) procedures for peri-apical radiographic survey.

1.4 Apply bisecting angle (short cone) procedures for peri-apical radiographic survey.

1.5 Evaluate dental radiographs for diagnostic quality.

1.6 Develop and fix exposed radiographic film.

1.7 Maintain unexposed radiographic film storage.

1.8 Mix solutions for developing and fixing radiographic film.

1.9 Apply extraoral radiographic procedures.

1.10 Apply bite-wing radiographic procedures.

1.11 Apply occlusal radiographic procedures.

1.12 Practice patient and operator safety measures for X-radiation.

1.13 Apply panoramic radiographic procedures.

1.14 Mount dental radiographs.

1.15 Label dental radiographs.

1.16 Clean X-ray processing equipment.

1.17 Position patient for radiographic examination.

1.18 Select film size appropriate for patient's mouth and indicated techniques.

1.19 Select accessories for radiographic (X-ray) technique

1.20 File dental radiographs.

1.21 Operate automatic processing equipment.

2.1 Receive and place telephone calls.

2.2 Receive and dismiss patients and visitors.

2.3 Maintain accurate patient dental records.

2.4 Issue receipts.

2.5 Make ledger entries.

2.6 Verify invoices.

2.7 Write checks and maintain balance.

2.8 Maintain state and federal tax information.

2.9 Maintain petty cash accounts.

2.10 Maintain appointment control.

2.11 Maintain an active recall system.

2.12 Prepare correspondence.

2.13 Prepare bank deposits.

2.14 Reconcile bank statement.

2.15 Complete dental insurance forms.

2.16 Arrange financial agreements.

2.17 File business and patient records.

2.18 Prepare statements.

2.19 Sort incoming mail.

2.20 Perform housekeeping duties.

2.21 Order supplies.

2.22 Maintain and rotate inventory.

2.23 Prepare tax forms.

2.24 Collect fees for dental services.

2.25 Assemble patient records for treatment.

3.1 Stabilize patient's mandible during operation.

3.2 Seat and dismiss patient from chair.

3.3 Apply coagulants or administer hemostatics.

3.4 Apply water to tooth during cavity preparation.

3.5 Cut suture material after tying by the dentist.

3.6 Explain postoperative instructions to patient.

3.7 Deliver and receive instruments at chairside.

3.8 Heat or prepare gutta percha for temporary stopping.

3.9 Insert or remove cotton rolls

3.10 Irrigate oral cavity for rinsing.

3.11 Make proper disposition and distribution of medical or dental records.

3.12 Aspirate during oral surgery.

3.13 Apply air to keep cavity preparation dry.

3.14 Evacuate oral cavity during restorative procedure.

3.15 Take impressions for study models.

3.16 Hold impression in mouth after dentist places impression tray.

3.17 Remove impressions from patient's mouth.

3.18 Apply topical anesthetics.

3.19 Identify various types of dental instruments.

3.20 Recognize various types of dental equipment.

3.21 Care for various pieces of dental equipment.

3.22 Prepare instruments for and operate autoclave.

3.23 Prepare instruments and operate dry-heat sterilizer.

3.24 Assist with oral surgery procedures.

3.25 Retract oral tissues in surgical procedures.

3.26 Retract patient's cheek, lips and tongue.

3.27 Prepare setup for local anesthetic injection.

3.28 Assist with the administration of local anesthetic.

3.29 Assist with rubber dam application and removal.

3.30 Place rubber dam.

3.31 Remove rubber dam.

3.32 Assist with amalgam restorations

3.33 Triturate amalgam-alloy.

3.34 Load carrier and place amalgam in cavity preparation.

3.35 Prepare setup for gold foil restoration.

3.36 Anneal gold foil.

3.37 Place gold foil as directed by operator.

3.38 Prepare setup for endodontics (root canal therapy).

3.39 Prepare setup for prophylaxis (cleaning).

3.40 Prepare setup for fluoride treatment.

3.41 Prepare setup for prosthetics.

3.42 Prepare setup for periodontal treatments.

3.43 Prepare tray setup for orthodontic treatments.

3.44 Assist with first aid procedures.

3.45 Clean operatories and equipment.

3.46 Prepare dental materials for placement.

3.47 Prepare non-carpule hypodermic syringe for injection of medications.

3.48 Examine and sharpen instruments as required.

3.49 Cut and remove sutures postoperatively.

3.50 Apply hand mallet in surgical procedures.

3.51 Hand triturate amalgam.

3.52 Change engine belt on low speed engine.

3.53 Preserve and incubate bacterial cultures.

3.54 Receive from dentist and preserve biopsy specimens.

3.55 Assist dentist in hospital oral surgical procedures.

3.56 Prepare hydrocolloid for impression.

3.58 Prepare rubber base material for impression.

3.59 Prepare compound for impression by dentist.

3.60 Prepare alginate for impression by dentist.

3.61 Fill alginate tray.

3.62 Prepare zinc phosphate cement for protective base.

3.63 Prepare silicate for restoration.

3.64 Prepare acrylic restoration.

3.65 Place periodontal surgical pack.

3.66 Remove periodontal surgical pack.

3.67 Remove medication (dry socket).

3.68 Place matrix for amalgam restoration.

3.69 Place temporary cement.

3.70 Condense amalgam restorations.

3.71 Carve amalgam restoration.

3.72 Remove excess cement from crowns of the teeth.

3.73 Remove temporary cement.

3.74 Record oral conditions as directed by dentist.

3.75 Instruct patient in Oral Hygiene.

3.76 Hand mallet gold foil.

3.77 Prepare and chemically disinfect instruments.

3.78 Assist dentist in hospital operative procedures.

3.79 Assist with gold foil restoration.

3.80 Maintain chain of antisepsis.

5.1 Store and inventory precious metals.

5.2 Clean and maintain laboratory instruments.

5.3 Maintain dental laboratory equipment.

5.4 Fabricate temporary removable bite raisers.

5.5 Fabricate cleft palate obturators.

5.6 Fabricate removable expansion appliances.

5.7 Fabricate face masks for before and after presentations of special cases.

5.8 Fabricate mouth guards.

5.9 Fabricate splints for immobilization of fractures of maxilla and mandible.

5.10 Fabricate temporary removable partial dentures.

5.11 Pour casts of orthodontic deformities.

5.12 Fabricate orthodontic space maintainers or retainers.

5.13 Cast gold crown, inlay or pontic backing.

5.14 Pour, trim, and articulate casts.

5.15 Fabricate broken stress or precision attachment bridges.

5.16 Fabricate copings.

5.17 Fabricate acrylic resin jacket crowns and pontics.

5.18 Fabricate amalgam dies.

5.19 Fabricate baked porcelain-to-gold restorations.

5.20 Fabricate electroformed dies.

5.21 Fabricate stone dies.

5.22 Finish and polish gold alloy inlays, crowns or fixed partial dentures.

5.23 Fabricate ceramic porcelain jackets.

5.24 Flask, pack, cure and deflask partial dentures.

5.25 Grind in porcelain or acrylic facings and pontics.

5.26 Pickle and heat treat gold inlays, crowns, or pontics.

5.27 Polish or glaze porcelain facings, teeth or pontics.

5.28 Solder units of fixed partial dentures.

5.29 Sprue, invest, and burn out gold alloy inlays, crowns, or pontics.

5.30 Test occlusion and fit of inlays, crowns, or fixed partial dentures.

5.31 Wax-up and carve inlays, crowns or pontics for fixed partial bridges.

5.32 Set up artifical teeth on removalbe partial denture framework.

5.33 Sprue and invest wax-up for casting removable partial dentures.

5.34 Survey and design study casts.

5.35 Survey and design removable partial dentures.

5.36 Transfer design from master cast to refractory casts.

5.37 Trim and wax-dip refractory casts of removable partial dentures.

5.38 Wax-up, shape, and contour saddles for try-in or final processing.

5.39 Wax-up components of frameworks for removable partial dentures.

5.40 Adapt wrought gold clasps and bars.

5.41 Block out and relieve master casts.

5.42 Burn out wax prior to casting.

5.43 Cast metal frame work for removable partial dentures.

5.44 Polish removable partial denture base.

5.45 Dehydrate refractory casts.

5.46 Duplicate master casts.

5.47 Estimate amounts of precious metals or chrome-cobalt alloys required for a casting.

5.48 Finish and polish metal partial denture frameworks.

5.49 Grind in tube teeth or facings.

5.50 Make trial baseplates and occlusal rims for removable partial dentures.

5.51 Pour refractory casts.

5.52 Remount removable partial denture prothesis for occlusal adjustments.

5.53 Sandblast chrome castings.

4.1 Greet patient and escort to dental hygiene operatory.

4.2 Position patient and operator.

4.3 Remove plaque and stain and polish teeth.

4.4 Clean interproximal surfaces of teeth with dental floss or tape.

4.5 Apply disclosing solutions to the teeth to identify bacterial plaque.

4.6 Apply fluoride to teeth isolated with cotton rolls.

4.7 Apply fluoride to teeth using the tray technique.

4.8 Apply fluoride using ionizing devices.

4.9 Identify abnormalities in soft tissues of the mouth.

4.10 Perform dental charting.

4.11 Identify deviant swallowing patterns.

4.12 Perform periodontal charting.

4.13 Identify extra-oral habits affecting occlusion.

4.14 Locate and assess the amount of stains and deposits.

4.15 Evaluate dietary habits and instruct patient on proper nutrition.

4.16 Select appropriate home care technique for each patient.

4.17 Give home care instruction.

4.18 Use ultrasonic devices to remove calculus.

4.19 Remove subgingival calculus.

4.20 Remove supragingival calculus.

4.21 Polish finished restorations.

4.22 Take and record patient's medical and dental hsitory.

4.23 Recognize conditions indicated in history that require alteration in procedures.

4.24 Administer anesthetics (topical).

4.25 Administer anesthetics (local injection).

4.26 Apply topical medications.

4.27 Prepare surgical periodontal packs.

4.28 Apply surgical periodontal packs.

4.29 Remove surgical periodontal packs.

4.30 Remove sutures.

4.31 Remove and insert temporary fillings.

4.32 Remove overhanging margins of fillings.

4.33 Smooth enamel fractures.

4.34 Maintain chain of antisepsis.

4.35 Sharpen instruemnts.

4.36 Plan sequence of procedures for appointment or series of appointments.

4.37 Desensitize hypersensitive teeth.

4.38 Give oral habit therapy.

4.39 Give physiotherapy instruction for temporomandibular joint difficulty.

4.40 Perform bedside oral prophylaxis.

4.41 Take and prepare oral cytologic smears.

4.42 Clean and polish removable appliances.

4.43 Perform root planing procedures

4.44 Perform soft tissue curettage.

4.45 Supervise other dental auxiliaries in routine dental tasks.

5.54 Select teeth for removable partial dentures.

5.55 Assemble and repair complete dentures.

5.56 Duplicate complete dentures.

5.57 Reline dentures by articulator method.

5.58 Reline dentures by flask method.

5.59 Repair metal parts of removable partial dentures.

5.60 Replace tube teeth or facings.

5.61 Apply foil or tinfoil substitute to complete dentures.

5.62 Pour final impressions to produce master cast.

5.63 Care for preliminary or final impressions.

5.64 Characterize denture base material.

5.65 Design and position palatal reliefs.

5.66 Design and form post dam.

5.67 Fabricate trial base plates and occlusal rims for complete dentures.

5.68 Flask, pack, cure, and deflask complete dentures.

5.69 Eliminate wax from denture molds.

5.70 Fabricate artificial teeth for characterized dentures.

5.71 Finish and polish complete dentures.

5.72 Critically evaluate for processing errors.

5.73 Critically evaluate completed case.

5.74 Fabricate cast metal bases for complete dentures.

5.75 Fabricate impression trays from preliminary impressions.

5.76 Fabricate individual surgical trays for immediate dentures.

5.77 Remount complete dentures for occlusal adjustments.

5.78 Select artificial teeth for complete dentures.

5.79 Stabilize baseplates.

5.80 Wax-up and contour complete denture base for try-in or final processing.

5.81 Complete simple denture repairs.

5.82 Critically evaluate impressions and casts prior to fabrication of case.

5.83 Interpret the dental prescription.

5.84 Bead and box complete or partial denture impressions.

5.85 Ditch the die.

5.86 Arrange artificial teeth in centric relation for complete dentures.

5.87 Arrange artificial teeth in balanced occlusion for complete dentures.

5.88 Fabricate immediate complete or removable partial dentures.

5.89 Solder component parts of removable partial denture.

5.90 Complete complex denture repairs.

5.91 Characterize and apply stains to porcelain facings, crowns, and pontics.

5.92 Supervise subordinates within the laboratory.

5.93 Give "on the job" instructions to subordinate personnel.

RDK:el
3/26/70

University of California
Division of Vocational Education
Dr. Melvin L. Barlow, Dir.
Dr. David Allen, Dep. Dir.
Elinor Shenkin, Adm. Asst.

Allied Health Professions Projects

Principal Investigator & Director

Dr. Melvin L. Barlow

National Advisory Committee
(Representative of National Organizations in Health Fields)

Exec. Res. Procedures & Des. Group
David Allen, Miles H. Anderson,
Melvin L. Barlow, B. Lamar Johnson,
Richard S. Nelson, Bernard R. Strohm

Deputy Director
Dr. Katherine L. Goldsmith

Research Associate
Dr. T. D. Cullen

Facility Support Services
Sr. Associate Director
Robert R. Henrich

Clinical Services
Sr. Associate Director
Dr. Richard D. Kingston

Secondary School Curric.
Sr. Associate Director
Diane E. Watson

Head Secretary
F. Muhs

Secretaries
B. Atkisson
J. Banuelos
D. Barnum
D. Baus
M. Campbell
M. Herrick
C. Johnston
E. Lee

O. Earl DiCicco
Minna L. Gosman
Najam Merchant

Thomas E. Freeland
Faye U. Munoz
Howard Taub
Lucile A. Wood

Lorraine Adams
Phyllis Agran
Stanley Beskin
William Hudson
Marilyn Ray
Shirley Majchrzak
Barbara Rosenquist

Editors
Mary Ellison
Sylva Grossman

Health Professions Advisory Committees
(Reps. of National Professional Orgs. & Service Consumer Groups)